GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION
SPONSORED PROJECT INITIATION

Date: 4/25/78

Project Title: ~~Research Initiation~~ -- Optically Addressable Storage Panel for Information Display

Project No: E-21-622

Project Director: Dr. T. Max Artusy

Sponsor: National Science Foundation

Agreement Period: From 4/15/78 Until 3/31/80
(Grant Period -- Includes flexibility Period)

Type Agreement: Grant ENG78-05596, dated 4/10/78

Amount: $25,000 NSF
6,640 GIT (E-21-322)
$31,640 Total

Reports Required: Annual Progress Report; Final Technical Report; Summary of Completed Project

Sponsor Contact Person (s):

Technical Matters
Jay H. Harris, Program Officer
Electrical and Optical Communications Program
Electrical Sciences and Analysis Section
Division of Engineering
National Science Foundation
Washington, D.C. 20550
(202) 632-5881

Contractual Matters
(thru OCA)
Mary Frances O'Connell
Grants Manager
MPE/BBS/SE Branch
Division of Grants and Contracts
National Science Foundation
Washington, D.C. 20550
(202) 632-2858

Defense Priority Rating: n/a

Assigned to: EE (School/Laboratory)

COPIES TO:

- Project Director
- Division Chief (EES)
- School/Laboratory Director
- Dean/Director--EES
- Accounting Office
- Procurement Office
- Security Coordinator (OCA)
- ✓ Reports Coordinator (OCA)
- Library, Technical Reports Section
- EES Information Office
- EES Reports & Procedures
- Project File (OCA)
- Project Code (GTRI)
- Other

CA-3 (3/76)

GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION

SPONSORED PROJECT TERMINATION

Date: 12/29/80

Project Title: ~~Research Initiation~~ -- Optically Addressable Storage Panel for Information Display

Project No: E-21-622

Project Director: Dr. T. Max Artusy

Sponsor: National Science Foundation

Effective Termination Date: 3/31/80 (Grant Period)

Clearance of Accounting Charges: - - - - -

Grant/Contract Closeout Actions Remaining:

_ Final Invoice and Closing Documents
X Final Fiscal Report Accounting (FCTR)
X Final Report of Inventions (If positive)
_ Govt. Property Inventory & Related Certificate
_ Classified Material Certificate
_ Other _____

Assigned to: Electrical Engineering (School/Laboratory)

COPIES TO:

Project Director
Division Chief (EES)
School/Laboratory Director
Dean/Director–EES
Accounting Office
Procurement Office
Security Coordinator (OCA)
Reports Coordinator (OCA)
Library, Technical Reports Section
EES Information Office
Project File (OCA)
Project Code (GTRI)
Other _____

CA–4 (1/79)

Progress Report

Max Artusy

Primary accomplishments have been construction of apparatus necessary to investigate the chemical physics of mixed metal vapor systems. Additionally service facilities necessary for support of this work have been fabricated.

In order that careful gas kinetic measurements be made, it is of absolute necessity that all reactants be of ultrahigh purity. This necessitates careful cleaning of all surfaces that the gas and metal vapor contacts. Thus, having a facility capable of chemically cleaning glass and metal is basic to the projected research. Bright dip solutions for brass, copper, aluminum, and stainless steel have been formulated. Each process, requiring approximately six chemical baths, has been developed. Chemical cleaning of glass may also be performed.

Before chemical cleaning, the item to be processed is freed of contaminating grease. It was necessary to build a vapor phase degreaser in order to accomplish this.

After the cleaning process, parts are stored in a drying oven. This is necessary to evaporate alcohol from the part left from the final rinse. Again because of monitary restrictions, this was fabricated.

Leak detection in the gas handling system is necessary in order to preserve reactantant purity. A Veeco He mass spectrometer leak checker is being cleaned and rebuilt in this lab so as to provide this service.

The anticipated experiments require an optics table and ultrahigh purity gas flow system. The 4' x 10' optics table was fabricated from steel angle stock. The top incorporates an NRC table top pad giving a flat steel surface with holes located on 4" centers.

The gas handling system located at one end of the optics table is also an integral part of the system. A 3' x 4' x 4' uni-strut cage occupies approximately one fourth of the table surface. Inside this is an aluminum lattice network onto which the flow system is mounted.

The flow system allows delivery of ultrahigh purity flowing gas to a cell at a pressure of 1 - 500 mm. Hg. This consists of a three-stage gas regulator and an array of valves, variable leaks, flow and pressure gauges, and mechanical pump. This system is nearing completion.

A glass blowing facility has also been added in order to support the flow system. Since a large part of the apparatus is glass, this capability is helpful in making quick changes and modifications.

IONAL SCIENCE FOUNDATION
Washington, D.C. 20550

FINAL PROJECT REPORT
NSF FORM 98A

E-21-622

PLEASE READ INSTRUCTIONS ON REVERSE BEFORE COMPLETING

PART I–PROJECT IDENTIFICATION INFORMATION

stitution and Address	2. NSF Program	3. NSF Award Number
orgia Institute of Technology hool of Electrical Engineering lanta, Georgia 30332	Electrical and Optical Communications	ENG-7805596
	4. Award Period From 4-15-78 To 3-31-80	5. Cumulative Award Amount $25,000.00

oject Title

OPTICALLY ADDRESSABLE STORAGE PANEL FOR INFORMATION DISPLAY

PART II–SUMMARY OF COMPLETED PROJECT *(FOR PUBLIC USE)*

The objective of this project was to show scientific feasibility of an optically addressable flat plate memory element. The device would utilize photo-induced Penning ionization in a gaseous discharge cell. An optically excited atom would transfer its energy to a secondary atom whose ionization potential was less than the energy of the first atom. A light pen or laser beam would be used to address individual discharge cells forming the memory. Erasure would be accomplished by modifying the plasma loss mechanisms by imposition of an external electric field.

A flowing-gas test apparatus was constructed, but device feasibility was not demonstrated.

PART III–TECHNICAL INFORMATION *(FOR PROGRAM MANAGEMENT USES)*

ITEM *(Check appropriate blocks)*	NONE	ATTACHED	PREVIOUSLY FURNISHED	TO BE FURNISHED SEPARATELY TO PROGRAM	
				Check (√)	Approx. Date
Abstracts of Theses	X				
Publication Citations	X				
Data on Scientific Collaborators	X				
Information on Inventions	X				
Technical Description of Project and Results			X		
Other *(specify)*					

Principal Investigator/Project Director Name *(Typed)*	3. Principal Investigator/Project Director Signature	4. Date
. M. Artusy/D. T. Paris		11/21/80

Form 98A (5-78) Supersedes All Previous Editions

Form Approved OMB No. 99R0013